

ABSTRACT OF THE DISCLOSURE

A radial gap brushless electric machine (30) having a stator (31) and a rotor (32) and a main air gap (34) also has at least one stationary excitation coil (35a, 36a) separated from the rotor (32) by a secondary air gap (35e, 35f, 36e, 36f) so as to induce a secondary flux in the rotor (32) which controls a resultant flux in the main air gap (34). Permanent magnetic (PM) material (38) is disposed in spaces between the rotor pole portions (39) to inhibit the second flux from leaking from said pole portions (39) prior to reaching the main air gap (34). By selecting the direction of current in the stationary excitation coil (35a, 36a) both flux enhancement and flux weakening are provided for the main air gap (34). A method of non-diffused flux enhancement and flux weakening for a radial gap machine is also disclosed.